

IN THE CLAIMS

A listing of the claims of the present application is as follows:

1. through 35. (Canceled).

36. (New) A substrate including a plurality of photodetectors, each photodetector of the plurality having an active area on a first surface of the substrate and a further active area on the side of a second surface of the substrate, wherein each photodetector of the plurality is provided with an adjacent conductive via electrically isolated from the substrate, from the first surface of the substrate to the second surface of the substrate, for connecting the active area to the second surface of the substrate, the second surface providing electrical connections for the active areas and the further active areas of the plurality of photodetectors.

37. (New) A substrate according to claim 36, wherein the conductive vias comprise polysilicon.

38. (New) A substrate according to claim 37, wherein the polysilicon is formed on the inner walls of the vias.

39. (New) A substrate according to claim 38, wherein there is provided a further conductive element from the side of the first surface of the substrate to the side of the second surface within at least one of the conductive vias.

40. (New) A substrate according to claim 38, wherein there is provided a filling material within at least one of the conductive vias.

41. (New) A substrate according to claim 36, wherein there is provided a further conductive element connected between the active area of at least one of the photo-detectors and the respective conductive via.

42. (New) A substrate according to claim 36, wherein there is provided a further conductive element on the side of the second surface of the substrate connected to at least one of the conductive vias.

43. (New) A substrate according to claim 42, wherein the further conductive element on the side of the second surface of the substrate is for making an off-chip connection to the conductive via.

44. (New) A substrate according to claim 36, wherein the photodetectors are photodiodes.

45. (New) A substrate according to claim 44, wherein the active areas on the first surface of the substrate are anodes.

46. (New) A substrate according to claim 44, wherein the further active areas are cathodes.

47. (New) A substrate according to claim 36, wherein the further active areas are formed as a layer on the second surface.

48. (New) A substrate according to claim 36, wherein the photodetectors are photodiodes of at least one of the following: an imaging system, a medical imaging system, and a computed tomography system.

49. (New) A substrate according to claim 36, wherein the plurality of photodetectors forms an array of photodetectors.

50. (New) A substrate according to claim 49, wherein the array of photodetectors extends in two directions.

51. (New) A substrate according to claim 49, wherein the array of photodetectors is arranged into a plurality of sub-arrays of photodetectors.

52. (New) An imaging system comprising: a radiation detector, a radiation source facing the radiation detector, and means for controlling the radiation detector and the radiation source, wherein the radiation detector includes at least one substrate including an array of photodetectors, each photodetector of the array having an active area on a first surface of the substrate and a further active area on the side of a second surface of the substrate, wherein each photodetector of the array is provided with an adjacent conductive via electrically isolated from the substrate, from the first surface of the substrate to the second surface of the substrate, for connecting the active area to the second surface of the substrate, the second surface providing electrical connections for the active areas and the further active areas of the array of photodetectors.

53. (New) An imaging system according to claim 52 wherein the radiation source is an X-ray tube equipped with a high-voltage generator.

54. (New) An imaging system according to claim 52, wherein the radiation detector and the radiation source are radially mounted in a cylindrical scanning structure.

55. (New) An imaging system according to claim 52, wherein the means for controlling comprises a computer system.

56. (New) A method of manufacturing a plurality of photodetectors comprising:  
providing for each of the photodetectors of the plurality an active area on a first surface of a substrate;  
providing for each of the photodetectors a further active area on the side of a second surface of the substrate;  
forming for each of the photodetectors an adjacent conductive via electrically isolated from the substrate, through the substrate from the first surface of the substrate to the second surface of the substrate;  
connecting the active areas to the conductive vias such that the active areas are connected to the second surface of the substrate; and  
providing at the second surface electrical connections for the active areas and the further active areas of the plurality of photodetectors.

57. (New) A method according to claim 56, wherein the conductive vias comprise polysilicon.

58. (New) A method according to claim 57, further comprising the step of forming polysilicon on the inner walls of the vias.

59. (New) A method according to claim 58, further comprising the step of providing at least one further conductive element from the first surface of the substrate to the second surface within at least one of the conductive vias.

60. (New) A method according to claim 58, further comprising the step of providing a filling material within at least one of the conductive vias.

61. (New) A method according to claim 56, further comprising the step of providing at least one further conductive element connected between at least one of the active areas and at least one of the conductive vias.

62. (New) A method according to claim 56, further comprising the step of providing at least one further conductive element on the side of the second surface of the substrate connected to at least one of the conductive vias.

63. (New) A method according to claim 62, wherein the further conductive element is a contact pad.

64. (New) A method according to claim 62, wherein the further conductive element on the side of the second surface of the substrate is provided for making an off-chip connection to the conductive via.

65. (New) A method according to claim 56, wherein the photo-detectors are photodiodes.

66. (New) A method according to claim 65, wherein the active areas on the first surface of the substrate are anodes.

67. (New) A method according to claim 65, wherein the further active areas are cathodes.

68. (New) A method according to claim 56, wherein the further active areas are formed as a layer on the second surface of the substrate.

69. (New) A method according to claim 56, wherein the photo-detectors are photodiodes of at least one of the following: an imaging system, a medical imaging system, and a computed tomography system.

70. (New) A method according to claim 56, comprising providing the plurality of photodetectors as an array of photodetectors.

71. (New) A method according to claim 70, wherein the array of photo-detectors is provided as a plurality of sub-arrays of photo-detectors.

72. (New) A radiation detector including photo-detectors formed in at least one substrate, at least one of said at least one substrate including a plurality of photodetectors, each photodetector of the plurality having an active area on a first surface of the substrate and a further active area on the side of a second surface of the substrate, wherein each photodetector of the plurality is provided with an adjacent conductive via electrically isolated from the substrate, from the first surface of the substrate to the second surface of the substrate, for connecting the active area to the second surface of the substrate, the second surface providing electrical connections for the active areas and the further active areas of the plurality of photodetectors.